

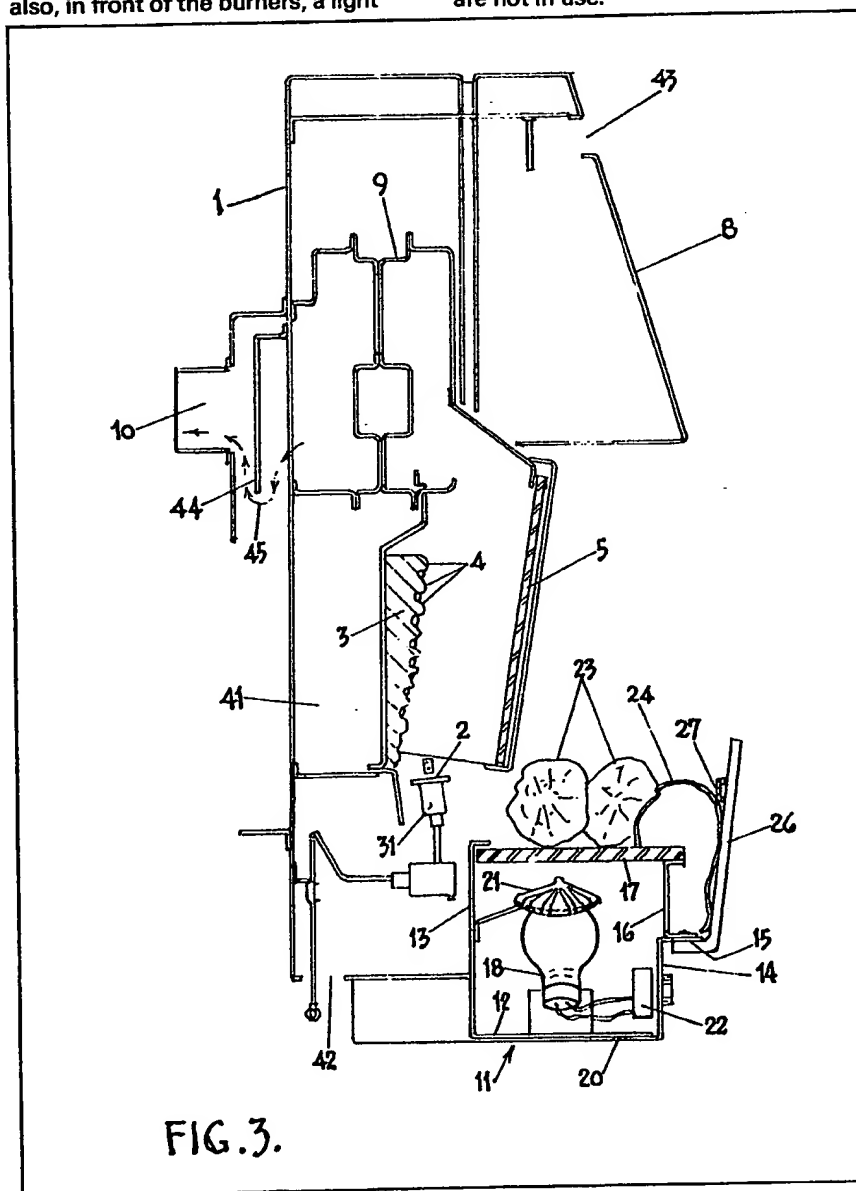
- (21) Application No 8107092  
 (22) Date of filing 6 Mar 1981  
 (30) Priority data  
 (31) 8011070  
 (32) 2 Apr 1980  
 (33) United Kingdom (GB)  
 (43) Application published 7 Oct 1981  
 (51) INT CL<sup>3</sup>  
 F24C 15/06  
 (52) Domestic classification  
 F4W 46A 46B 57  
 (56) Documents cited  
 GB 1360799  
 GB 1158422  
 GB 1153728  
 GB 1028701  
 (58) Field of search  
 F4W  
 (71) Applicants  
 Cannon Industries  
 Limited, Gough Road,  
 Bilston, West Midlands  
 WV14 8XR  
 (72) Inventors  
 Peter Alan Busby,  
 Peter Samuel Marklew,  
 Peter Frederick Tuck  
 (74) Agent  
 H. V. A. Kirby, Central  
 Patent Department, The  
 General Electric Co. Ltd.,  
 Hirst Research Centre,  
 Wembley, Middlesex  
 HA9 7PP.

(54) Gas fires

(57) A gas fire has a plate (3) of radiant material disposed approximately vertically behind a plurality of gas burners (2) spaced apart adjacent the lower edge of the plate so that flames issuing from the burners are directed upwards across the front surface of the plate, the surface having a multiplicity of protuberances (4) on which the flames can impinge, and the fire incorporating also, in front of the burners, a light

transmitting support (17) for simulated fuel (23, 24), and beneath the support one or more electric lamps (19) disposed so that light therefrom is directed upwards through the support to illuminate at least some of the protuberances.

By utilising a red lamp or lamps or by making the support of red light-transmitting material the illumination of the radiant as well as the artificial fuel will give an advantageous "warm-glow" effect even when the burners are not in use.



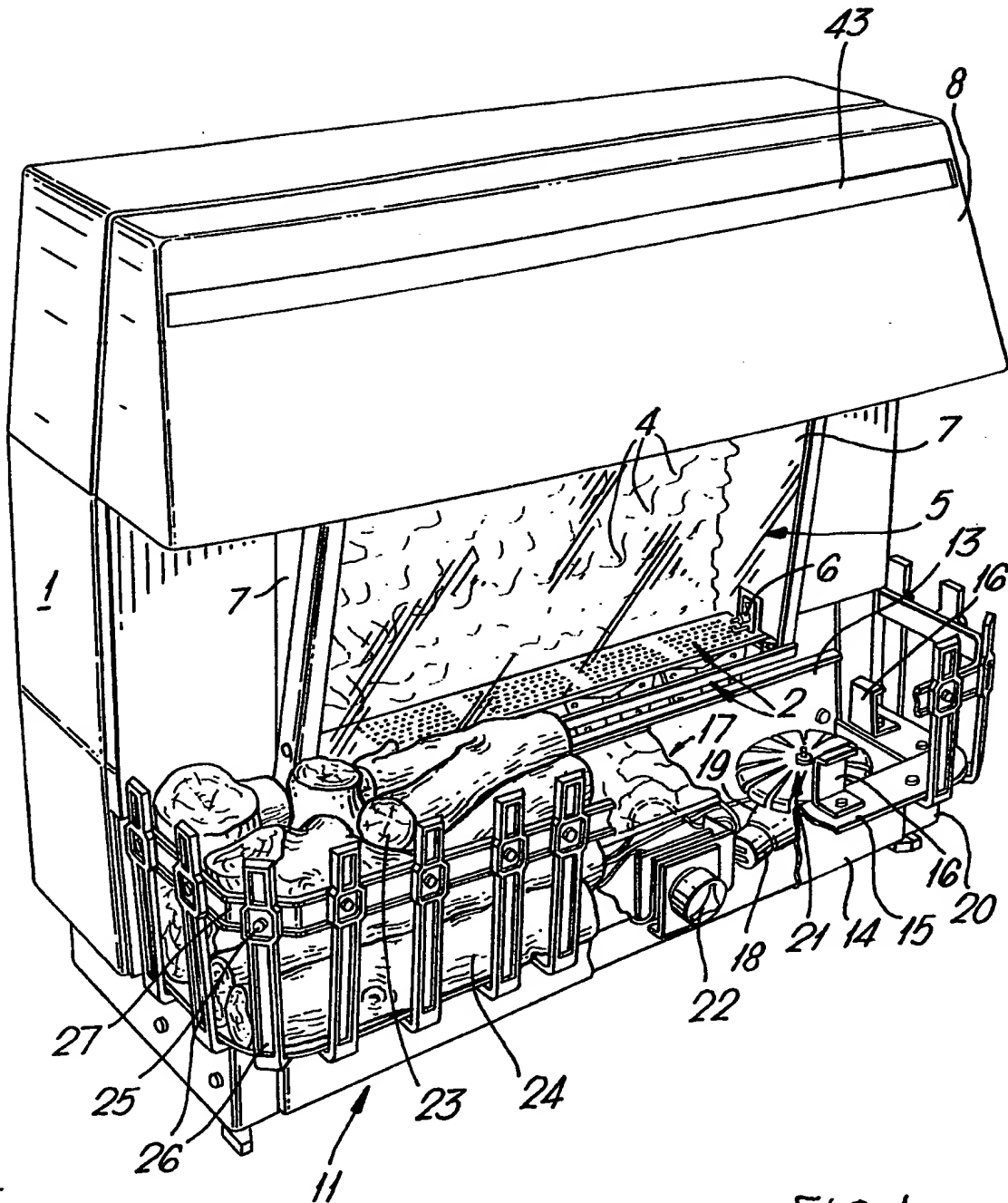


FIG. 1.

2/3

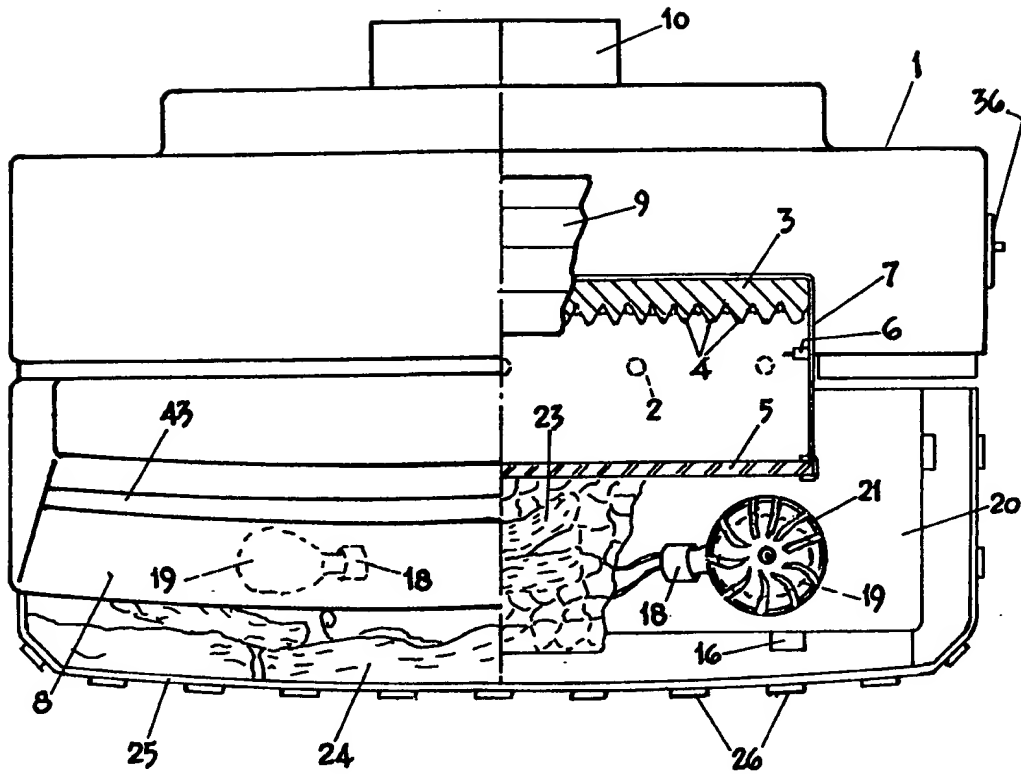


FIG. 2.

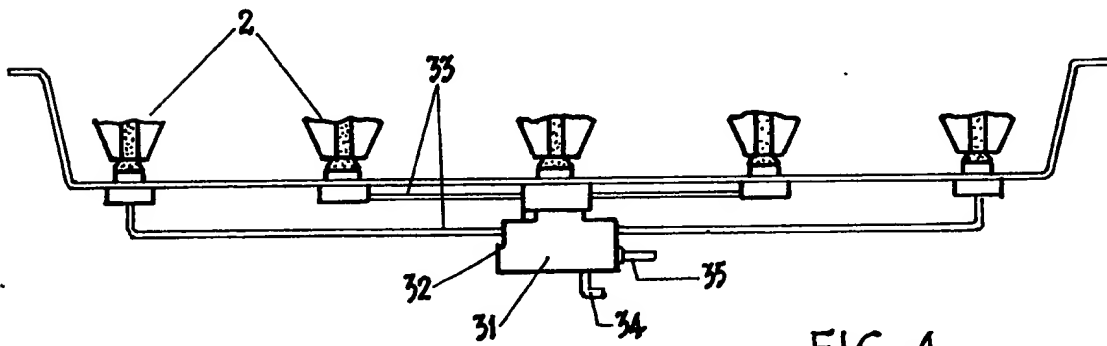


FIG. 4.

3/3

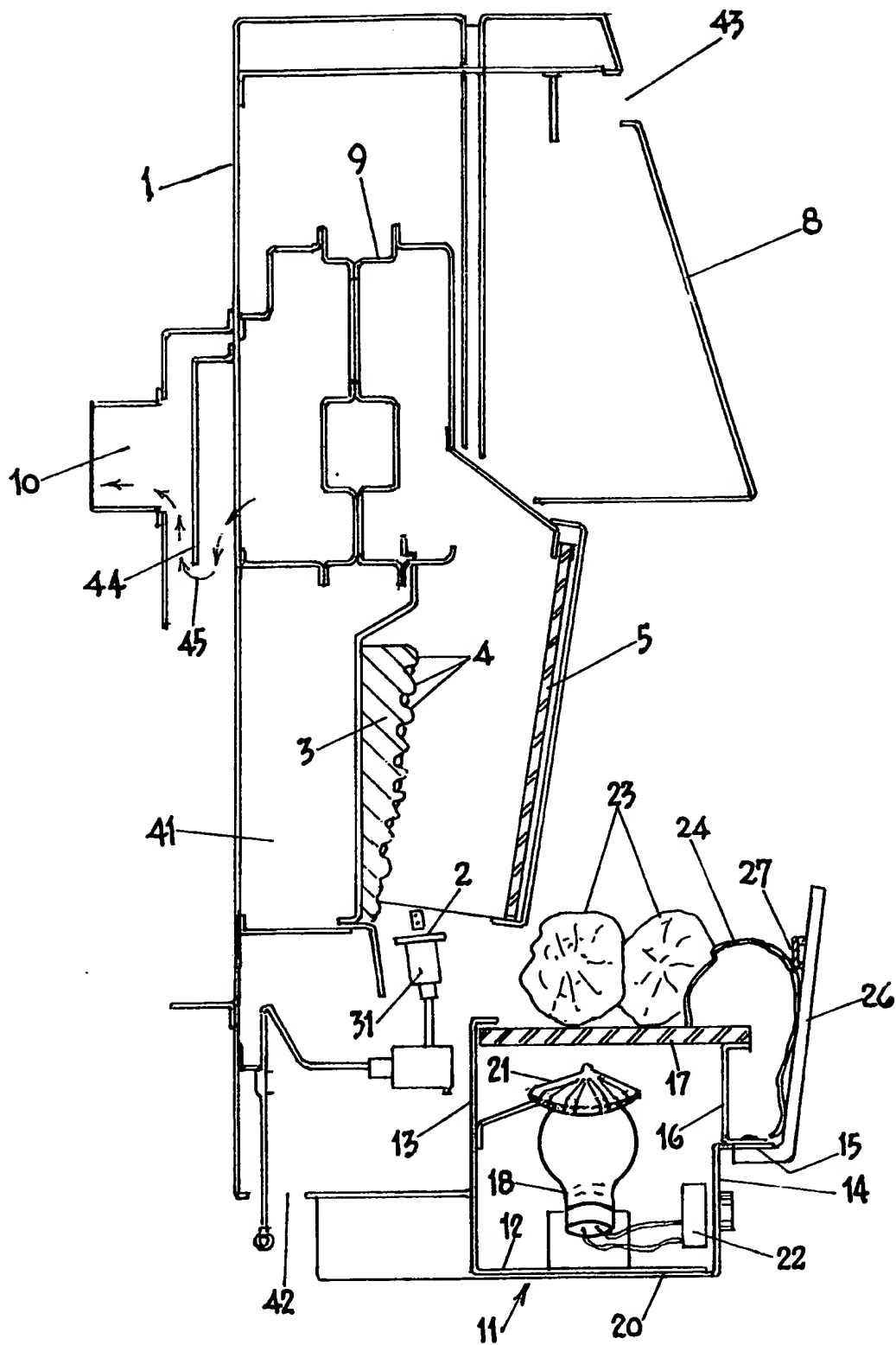


FIG. 3.

## SPECIFICATION

### Gas fires

This invention relates to gas fires, especially those of the flame effect type which are intended in use to simulate solid fuel fires.

According to one aspect of the invention a gas fire incorporates one or more radiants disposed to provide a forwardly facing surface behind a burner means arranged to direct gas flames on to said surface, said surface having a multiplicity of protuberances on which said flames can impinge, the fire incorporating also, in front of and below said surface, a light-transmitting support for simulated fuel, and one or more electric lamps below said support and arranged so that, in use, light therefrom illuminates at least some of the protuberances.

Preferably the protuberances are irregularly shaped and positioned, and the light-transmitting support is disposed so that the protuberances are illuminated by light from the lamp or lamps shining upwards through the support.

By utilising a red lamp or lamps, or alternatively by making the support of red light-transmitting material illumination of the radiant as well as the artificial fuel will give an advantageous "warm-glow" effect even when the gas-burners are not in use, particularly where the light is arranged to flicker, as by the use of a varied spinner above the or each said lamp.

Preferably the flow of air to at least some of the burners is restricted to give a yellowish flame, which enhances the solid-fuel-fire effect.

Preferably also the gas supply to the burners is controllable in a manner such as to provide different heat settings in which a different number of burners are supplied with gas. By this means the height of the gas flames of those burners in use can be kept substantially constant for different heat settings.

For example the fire may have five burners and a control means in the form of rotary valve capable of being set to an "off" position in which there is no flow of gas to any of the burners, and sequentially to positions in which gas is supplied to all of the burners, four, three and two of the burners and finally one burner only, and is arranged to give a symmetrical operation of the burners when less than the full number are being used.

Preferably also the control of the lamp or lamps is effected by means of a dimmer switch, such that, if desired, the lamp brightness can be controlled in dependence on the number of burners operating.

At least the simulated fuel adjacent the burners is preferably of a suitable refractory material such as a ceramic, although that further from the burners may if adequately shielded from the heat of the burners, be formed of glass fibre reinforced plastics material pressed or moulded to the required shape, for example as logs or lumps of coal.

The surface of the radiant plate facing the

burners may be inclined slightly towards them, and in some cases it may be formed with a slight curvature.

Preferably a transparent heat resistant glass panel is disposed in front of the radiant forward of the burner means to provide a protective barrier and also to confine the products of combustion and guide them into a chamber from which they can be conveyed to a flue, possibly through a heat-exchange unit by which heat from the hot gases can be transferred to room air caused to flow over the heat-exchange unit by convection and then circulated back into the room.

One gas fire in accordance with the invention will now be described by way of example with reference to Figures 1 to 4 of the accompanying schematic drawings, in which

Figures 1 and 2 represent a perspective view and a diagrammatic plan view of the fire with parts broken away to show some of the constructional details more clearly,

Figure 3 represents, also in diagrammatic form, and not to scale a sectional side elevation of the fire, and

Figure 4 illustrates the burner control arrangement.

Referring to the drawings, the fire comprises a sheet metal casing 1 supporting within it a horizontal row of five burners 2. Behind and above the burners there is mounted a backbrick 3 in the form of a ceramic plate arranged approximately vertically but with its front surface inclined at a slight angle towards the front of the fire. This front surface is formed with a multiplicity of irregularly shaped and positioned protuberances 4. In front of the backbrick, and forwardly of the burners 2, is mounted a heat resistant glass panel 5 approximately parallel to the front surface of the backbrick, the lower edge of the panel being just above the burners to permit them to be lit manually if required, although lighting will usually be effected by a spark gap ignition device 6 which may be positioned as shown at one end of the row of burners.

The backbrick 3 and panel 5, together with metal end panels 7 form a chamber for confining the products of combustion and carrying them upwards beneath a canopy 8 into a heat exchange unit 9 (Figs. 2 and 3) and finally through an outlet 10 to a chimney flue (not shown).

In front of the main casing 1 and extending its full width is an auxiliary unit 11 comprising a sheet metal tray 20 having a base 12 surrounded on all four sides by upstanding walls 13, 14. The rear wall 13 of the tray is of greater height than the front and side walls 14 and extends upwards almost to the height of the burners 2; the walls 14 terminate in an outwardly extending flange 15 carrying brackets 16 which provide supports for a substantially horizontal glass plate 17. Two lamp-holders 18, disposed near opposite ends of the tray 20, are arranged to be fitted with red lamps 19 above which are mounted vaned spinners 21 operated by convection currents to provide a flicker effect in use in known manner, the lamps

being controlled by a dimmer switch 22 located at the middle of the front wall 14.

The glass plate 17 supports, adjacent the panel 5, a number of artificial log elements 23 of ceramic material, surrounded at the sides and front of the unit 11 by one or more mouldings 24 of resin impregnated glass fibre also shaped and painted to give the appearance of logs.

A surround 25 comprising a series of pillars 26 joined by a horizontal bar 27, conveniently formed as a metal casting is attached to the out-turned flange 15 of the unit so that it has the appearance of a fire basket containing logs provided by the elements 23, 24.

The unit 20 is detachably secured to the main casing 1 of the fire to facilitate independent servicing.

In use the artificial log elements 23 are disposed so that some of the light from the lamps 19 is directed on to the front of the backbrick 3.

Also the amount of air which mixes with the gas in at least the three inner burners is pre-adjusted to give a yellowish flame which, together with the heating of the backbrick by the flames and also its illumination by the electric lamps gives a very realistic "living-fire" effect.

Moreover the illumination of the backbrick by the lamps results in a pleasing "warm" appearance even when the burners of the fire are turned off.

Control of the burners 2 is by means of a rotary tap 31 located beneath the central one of the burners (Figure 4).

The tap conveniently consists of a distributor block 32 having an outlet-passage connected directly to the central burner, and further outlet passages connected to the other burners by pipes 33; the interior of the block is also connected to an inlet pipe 34 which is arranged to be connected to a suitable gas supply. A plug 35, rotatable within the distributor block 32, controls the supply of gas through the passages to the various burners 2 by means of suitably positioned ports and is coupled through a rod (not shown) to a control knob 36 at one side of the fire.

The ports in the plug 35 are disposed so that in one position of the plug the flow of gas to the burners is completely cut off. Rotation of the plug through a predetermined angle by means of the control knob causes gas to be supplied to all the burners and at the same time the ignition device 6 is operated to light the burners. Rotation of the plug to a different position causes gas to be supplied to all but the central burner, whereas further rotation causes gas to be supplied to the three inner burners, then to the two inner side burners and finally to the central burner alone.

In this way any number of burners from one to five may be brought into use.

Conveniently the ports in the plug are arranged to overlap the outlet passages in the distributor block during rotation of the plug in a manner such that gas is supplied to burners to be ignited before the burners which are to be extinguished are turned off, thus ensuring a continuance of the

flames for a sufficient length of time to ignite the newly introduced burners.

Conveniently the air-gas mixture supplied to the burners is adjusted so that a ratio of air to gas gives the required yellowish flame with an insignificant degree of sooting.

In use of the fire air within a chamber 41 formed between the rear surface of the backbrick 3 and the rear of the casing 1 becomes heated and rises, being replaced by room air admitted by an opening 42 beneath the rear of the fire. The heated air is further heated in its passage over the heat exchange unit 9 and is fed back into the room through a grille 43 in the form of a slot extending along the front of the canopy 8 near the top. In addition some of the room air heated by the front of the glass panel 5 enters the cavity under the canopy where it is further heated by contact with a surface of the heat exchanger 9 and is returned to the room via the grille 43.

It will be seen that the products of combustion are kept entirely separate from the room air, and are thereby prevented from mixing with it.

The outlet 10 into the flue incorporates a downdraught deflector 44 which ensures that any downdraught from the flue is directed downwards behind the fire and not through the fire in a reverse flow. In normal use of the fire the products of combustion are discharged through the outlet 10 after passage beneath the lower edge of the deflector as indicated by the arrows 45.

#### CLAIMS

1. A gas fire incorporating one or more radiants disposed to provide a forwardly facing surface having a multiplicity of protuberances, burner means arranged to direct gas flames on to said surface, a light transmitting support for simulated fuel in front of and below said surface, and one or more electric lamps below said support and arranged so that, in use, light therefrom illuminates at least some of the protuberances.

2. A gas fire according to Claim 1 wherein the protuberances are irregularly shaped and positioned.

3. A gas fire according to Claim 1 or 2 wherein the light-transmitting support is arranged so that the protuberances are illuminated by light from the lamp or lamps shining upwards through the support.

4. A gas fire according to any one of Claims 1 to 3 including means for producing a flickering effect of the light from the lamp or lamps illuminating the protuberances.

5. A gas fire according to any preceding claim having a single radiant in the form of a plate disposed substantially vertically behind a plurality of burners.

6. A gas fire according to Claim 5 including control means for controlling the supply of gas to the burners in a manner such as to enable the heat output to be varied by altering the number of burners supplied with gas, whilst maintaining the height of the flames approximately constant.

7. A gas fire according to Claim 6 having five burners, and in which the control means is in the form of a rotary valve capable of being set to an "off" position in which there is no flow of gas to any of the burners, and sequentially to positions in which gas is supplied to all the burners, four, three and two of the burners and finally one burner only, and is arranged to give a symmetrical operation of the burners when less than the full number are being used.

8. A gas fire according to any preceding claim incorporating a transparent panel disposed substantially vertically in front of the burner means, and forming at least part of a wall of a partially enclosed chamber which serves to

confine the combustion products and communicates with a flue.

9. A gas fire according to Claim 8 incorporating, between said chamber and the flue, a heat exchanger through which the hot combustion products pass, for transferring heat to air drawn, by convection, from the space in which the fire is located and subsequently discharged back into said space.

10. A gas fire according to any preceding claim including a dimmer switch for controlling the lamp brightness.

11. A gas fire substantially as shown in and as hereinbefore described with reference to Figures 1 to 4 of the accompanying drawings.